

JOURNAL
OF THE
WASHINGTON ACADEMY OF SCIENCES

VOL. 26

FEBRUARY 15, 1936

No. 2

BOTANY.—*Certain Cactaceae of Venezuela: New and old species of Opuntia and Melocactus.*¹ H. PITTIER, Caracas, Venezuela.

In the course of my botanical work in Venezuela, I have become closely acquainted with some of the Cactaceae which form one of the main elements of the thorn-bushes of this country. Besides, I have now in cultivation and under observation a few doubtful species. The following are the first results of my investigations.

Opuntia metuenda Pittier, sp. nov. (Cylindropuntiae-Leptocaulales)

Horrida, insolite armata, trunco ramisque lignosis, teretibus, decumbentibus vel interdum suberectis; areolis parvis cano-villosis, parce vel haud glochidiatis, aculeis 1-3, nudis, porrectis, flavescens, uno longiore, armatis; articulis teretibus, dissitis, plus minusve alternis, caducissimis; foliis parvis, crassis, obovoideis, acuminatis, cito caducis; areolis articuli cujusque 22-28, 3-4 inferioribus inermibus aculeatisve vel setis rigidis rubescentibus instructis, reliquiis superioribus 1-aculeatis, aculeo nudo, longo, aciculari, flavescenti, interdum aliisque 1-2 obsolete adjectis; glochidiis inconspicuis vel nullis; floribus parvis, luteis; ovario obovato, areolis paucis, glochidiatis vel raro apicem versus 1-2 aculeis instructo; perianthio plus minusve rotato, segmentis exterioribus brevibus latisque, minute apiculatis, interioribus obovato-spathulatis, basi angustis, apice obtusis subacuminatisve; staminibus numerosis, flavescens, filamentis tenuibus, antheris oblongo-linearibus basifixis; stylo flavo, crasso, apicem versus attenuato; stigmate magno, purpureo, 6-8-lobulato; bacca obovoideo-globosa, matura rubra, areolis fere inermibus, glochidiatis, interdum armatis.

Caudices 40-120 cm. longi, 1.2-1.5 cm. diam.; articuli 4-6 cm. longi, 0.8-1 cm. diam. Aculei 1.5-4 cm. longi. Folia 3 mm. longa. Flores plus minusve 3 cm. longi, 1.5-2 cm. diam. Petala interiora 1.5-1.7 cm. longa, 1-1.5 cm. lata. Stamina plus minusve 1.5 cm. longa. Stylus (cum stigmate 3-4 mm. longo) 1.5 cm. longus. Bacca 1-1.2 cm. diam.

LARA: Savannas around Barquisimeto, June 28, 1913 (*Pittier* 6415); Barquisimeto, in ravines descending to Rio Turbio, flowers and fruits, September 18, 1923 (*Pittier* 11176, type). The above description was drawn (flower and fruit) from this latter specimen and partly from living plants in my garden obligingly sent from Barquisimeto by Brother Nectario of the La Salle College, to whom I extend my best thanks. From recent information it appears that the species is far from being restricted to the vicinity of Barquisimeto. Dr. A. Jahn reports it as growing abundantly in the hills

¹ Received October 24, 1935.

that surround Lagunillas (Mérida), at an altitude of about 1000 to 1200 meters. It is also said to be common in arid places through the State of Falcón and in eastern Venezuela around Cumaná (Sucre). Thus, the altitudinal range of the species would be from sea level to about 1200 meters.

Opuntia metuenda is known locally as *guasabar*, *guasábara*, *tuna de guasábara* (Lara), *guasábana* (Sucre).

***Opuntia bisetosa* Pittier, sp. nov. (Platyopuntiae-Elatiores)**

Planta elata, e basi ramosa; articulis ovato-oblongis obovatisve, crassiusculis, pallide viridibus; areolis fere 7-seriatis, 6 vel 7 in quaque serie² (marginalibus exceptis); aculeis areolarum juveniliū 5 vel minus, primum lutescentibus demum albidis; aculeis areolarum maturarum 8–10, robustis, albidis, 1 centrali, erecto, longiore, compresso, distorto, 7–9 brevioribus, acicularibus, plus minusve obliquis, inferioribus pluries setis 2, longis, rigidis, suffultis; foliis tenuibus, elongatis, subteretibus, subtiliter apiculatis, apice purpurascens; floribus modice magnis; ovario obconico, areolis 8-seriatis, 5 quaque serie, inferioribus glochidiatis setaceisque, superioribus 1–3-aculeatis, albo-glochidiatis, aculeis albis, pilis brevibus rufescentibus cinctis, basi foliis 1–2 deciduis suffultis; foliis marginalibus 5, brevissimis, crassiusculis, apice spinulosis; perianthio cupuliformi, segmentis exterioribus late obovatis truncato-apiculatis, interioribus obovatis, apice rotundatis emarginatisve, basi virescentibus, apice incarnatis; staminibus numerosis, filamentis pallide roseis, antheris minutis, albis; stylo crasso, apicem versus leviter attenuato, albo; stigmatē magno, subgloboso, pallide viridi, 8-lobulato; bacca ovata, omnino saturate rosea, superne aculeata, aculeis tenuibus brevibusque; seminibus albis.

Planta, ut videtur, usque ad 1.2 m. alta. Articuli usque ad 36 cm. longi, 18 cm. lati. Areolae 3–4 cm. remotae. Aculeus centralis usque ad 5 cm. longus. Folia 4–5 mm. longa. Flores 6.5 cm. longi, 5 cm. diam.; folia marginalia 5–6 mm. longa; perianthi segmenta interiora 2.8 cm. longa, 1.8 cm. lata; stamina circa 1.8 cm. longa; stylus 2–3 cm. longus; stigma 5–7 mm. diam. Bacca 5 cm. longa, 2.2 cm. diam., aculeis tenuibus usque ad 11 mm.

This description was drawn from a living plant obtained from a joint collected at Sanare, State of Lara, by Mr. Fr. Tamayo and cultivated in my garden. The species seems to be allied to *Opuntia wentiana* Britt. & Rose, from which it is easily distinguished by the two bristles at the base of the inferior spines in the areoles of the joints. Botanical specimens distributed under *Pittier* 13578 (type).

Opuntia wentiana Britt. & Rose, Cact. 1: 116. 1919

Plant erect, much branched; joints ovate, obovate or elliptic, thickish, whitish green and covered in age with tiny white dots which give them a glaucous appearance; areoles 4 to each oblique row (marginal not included); spines on young joints mostly 3, later 4 to 6, to each areole, strong, terete, at first yellowish, turning to light gray; leaves early deciduous, thick, rounded, the apex spinulose, more or less purplish; flowers medium-sized; ovary obconical with 5 oblique rows of areoles, these 4 to the row and leav-

² According to my experience with the Venezuelan *Platyopuntiae*, the seriate disposition of the areoles on each face of the joint and the number of areoles in each row are fairly constant and constitute a good specific character. The same can be said of the leaves on the upper margin of the ovary.

ing the base of the ovary smooth and spineless; areoles spineless or with 1 minute spine, with a central tuft of white glochids surrounded by a narrow cushion of brown cellular hairs; at the base of the areole a short, thick, apiculate leaf; calycinal leaves 5-6; segments of the perianth broadly obovate, the outer ones shorter, more or less greenish, minutely apiculate, the inner ones larger, yellow, often tinged with pink near the apex, slightly emarginate; stamens numerous, the upper part of the filaments and the anthers pale pink; style whitish, its base thick, rounded, pointed at the base and attenuate towards the apex; stigma lobes 5-6, parted, cream colored, forming a subglobose head; fruit rather small, rounded at base, spineless but glochidiate, the umbilic very deep.

Joints 20-25 cm. long, 12-13 cm. broad. Leaves 3-5 mm. long. Distance between areoles in row 4-5 cm. Major spine up to 7 cm. long (on the average 4-5 cm.). Flowers 6 cm. long, 6 cm. diam. when fully open. Calycinal leaves 2 mm. long. Inner segments of perianth 3 cm. long, 2.5 cm. broad. Stamens 1.8-2 cm. long. Style (including stigma head 7 mm.) 2.7 cm. long. Fruit about 3 cm. long, 2.2 cm. diam.

But for the leaves, which are not subulate, and the inner segments of the perianth, of a darker yellow (turning to pink in age) and not acute, the above described plant agrees with the incomplete description of *Opuntia ventiana* as given by Britton and Rose and should at all events be keyed in the same group, which includes *O. caracasana*, *O. ventiana* and the new *O. bisetosa*. From the first one, the flowers and fruits of which are not known, it differs in the habit, the larger joints, the thick, turgid leaves and the spines, longer and mostly more numerous.

The above description was made from living specimens in my garden, obtained from a joint brought from El Tocuyo, State of Lara, by Mr. Fr. Tamayo. Herbarium specimens are being distributed under *Pittier* 13577.

Melocactus amoenus (Hoffmannsegg) Pfeiffer, Enum. Cact. 43. 1837

Melocactus caesius Wendland in Miquel, Nov. Act. Nat. Cur. 18, Suppl. 1: 184. 1841.

Melocactus griseus Wendland, l. c., p. 185.

Cactus amoenus Hoffmannsegg, in Preiss, Verzeich. ed. 7, 22. 1833.

In their standard work on Cactaceae, Britton and Rose give brief descriptions, under the names *Cactus amoenus* and *C. caesius*, of two supposedly distinct species of *Melocactus*, the first growing on the northern coast of Colombia, the other on the coast of Colombia and Venezuela. A mere comparison of the meager descriptions of these two species would incline one to the belief that they are identical. The given differentiating character "spines curved" and "spines straight" is too vague and inconstant, since perfect specimens of the Venezuelan *M. caesius* have always more or less curved spines.

Britton and Rose give Colombia as the type locality of *Melocactus amoenus* but in the second edition of Förster's *Handbuch der Kacteenkunde* we read³

³ Carl Friedrich Förster's *Handbuch der Kacteenkunde in ihrem ganzen Umfange*, . . . von Theodor Rümpler. Zweite ganzlich umgearbeitete Auflage, pp. 425-426. 1886.

[translated]: "Fatherland Venezuela, where *Ed. Otto* found it up to an altitude of 1600 m. in the vicinity of La Guaira, growing on a red clayey soil among *Agave*, large columnar *Cerei* and *Opuntiae*. It existed there in considerable numbers and in all possible forms and sizes." Continuing, the *Handbuch* gives a description of the plant, which is wanting only in the characters of the fruit and seeds, and which applies accurately to most of the specimens I have handled: "Body conical-depressed, at first globose-depressed, grayish green. Ribs 10-12 [10-15] obtuse, not very salient; areoles white [to gray], [2.5 cm.] distant, sunken, but at first roundish; spines straightish, stiff, subulate, spreading, at first reddish, later dark brown; radial spines 8, the upper ones [usually shorter, 1 cm. and up] very short, the inferior ones very long [up to 3 cm.]; central spine solitary, erect, almost always absent on young individuals. Cephalium vaulted, whitish [with red bristles and spines]. Flowers in July, [1.7 to] 2.5 cm. in diameter when fully open, which happens in the afternoon only, the segments of the perianth pinkish red, long-lineal, spreading. [Fruit about 3 cm. long, obclavate, red]. One of the prettiest and most freely blooming species. Reaches a height of 15 to 18 cm., with a diameter slightly larger. The extirpation of the cephalium results sometimes in the production of new buds."

The additions between [] are mine and complete the description.

Further on we have a description of *Melocactus caesius*, which has 10 ribs, instead of 10 to 12, on a globose-depressed body, the areoles grayish, 2.5 cm. distant, the spines strong, stiff, straightish, pale reddish, the radial ones 8, spreading, the central one shorter. The flowers completely developed measure 15 to 18 mm. in diameter, the pinkish red segments of the perianth are lineal, and obtuse or emarginate at the apex, the stamens and the 7 lobes of the stigma yellow.

According to these descriptions, much more accurate than the ones of Rose and Britton, the two species would differ in the shape of the adult body, the number of the ribs, the color of the areoles, the length of the central spines and the diameter of the flowers, all characters very variable in any species. Moreover the *Handbuch*, after describing a variety *griseus* of *M. caesius*, with 15 ribs, adds that in all probability *M. caesius* and *M. griseus* are only forms of *M. amoenus*.

My own observations fully confirm this last view. In a single station, in a group of a large number of individuals of the same ancestry, all the types included under the descriptions of *M. amoenus*, *M. caesius* and *M. griseus* were represented. The form of the body is far from constant, the number of ribs varies from 10 to 15, the color of the areoles is either gray or white, the spines are seldom straight, the radial ones almost always 8 and of variable length. The color of the flowers is almost uniform but their size is reduced in the poorer forms, in which also the spines do not attain their full development.

For these reasons, I think that *Melocactus caesius* and *M. griseus* should be considered as synonymous with *M. amoenus*, which is the oldest name. It is even doubtful whether the forms described under the two first names ought to be considered as fixed varieties.

The type of *M. amoenus* was probably from the vicinity of La Guaira, Venezuela, and not from Colombia. The original description dates from 1833, that is from a time when the secession of Venezuela from Great Colombia in 1830 had hardly become generally known. There is no mention of any botanist or collector having visited the arid parts of the coast of Colombia in the few years previous to the first publication of the species, while in Caracas several persons, stimulated by the example of the illustrious Vargas, were interested in the flora of the surrounding region and may have sent to Europe samples of such striking plants as the one in question.

Melocactus amoenus appears almost everywhere in the arid parts of the coast of northern South America, including the islands, between Trinidad and Santa Marta. It is very doubtful whether the specimens photographed by Dr. Stahel in the interior of Dutch Guiana belong here. The cephalium of these plants, as it appears in the picture published in Britton and Rose (Cactaceae 3: 234) is much larger and more prominent than in our species. I also think that the upper altitude of 1600 m. cited in the translation from Förster's *Handbuch* is exaggerated. To my knowledge, the species does not appear above 1000 m. and reaches its fullest development in the warmest stations, not far distant from the seashore. The plant also appears scattered in the semi-desert districts around Barquisimeto, El Tocuyo and Carora, in the State of Lara.

PALEOBOTANY.—*Field identification of the fossil ferns called Tempskya.*¹ ROLAND W. BROWN, U. S. Geological Survey.

Tempskya is a genus of fossil ferns whose remains, so far as now known and understood, are found in place exclusively in strata of Cretaceous age. Unlike the attractive black impressions of the fronds of Carboniferous ferns and seed-ferns commonly illustrated in textbooks and exhibited in museums, specimens of *Tempskya* are rough, irregularly cylindrical or conical blocks (Fig. 5) resembling some occurrences of fossil wood. The foliage of ferns, it may be noted, has been found in the same or contemporaneous strata as the *Tempskya* trunks, but the two have never been found in direct connection and consequently, no definite correlation between foliage and stems has yet been made. Because *Tempskya* has considerable value as a

¹ Published by permission of the Director, U. S. Geological Survey. Received October 19, 1935. Helpful suggestions in the preparation of this paper are acknowledged to my colleague, Charles B. Read.